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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,226	02/09/2001	Shinji Fukushima	MAT-8026 US	8947

7590 04/08/2003

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EXAMINER
CUEVAS, PEDRO J

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/701,226	FUKUSHIMA, SHINJI	
	Examiner	Art Unit	
	Pedro J. Cuevas	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS's) submitted on November 28, 2000 and February 13, 2001 were timely filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have already been considered by the examiner. The proper acknowledgement of the consideration of these IDS's can be found on item #3 in the Attachment(s) section of the Office Action Summary from the Office Action mailed on December 21, 2001.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,490,635 to Harrison et al. in view of U.S. Patent No. 4,578,606 to Welterlin.

Harrison et al. clearly teaches the construction of a brushless motor(10) comprising:

a rotor (26) with a permanent magnet (176) having P (P is an integer not less than two) polarities, the permanent magnet polarities having a polarity angle; and

a stator (174) facing said rotor and having a plurality of coils (212-222).

However, it fails to disclose a brushless motor, wherein:

any one of the coils has isosceles sides interlinking with magnetic field generated by the polarities extension lines of the isosceles sides extending through centers of winding-bundles of

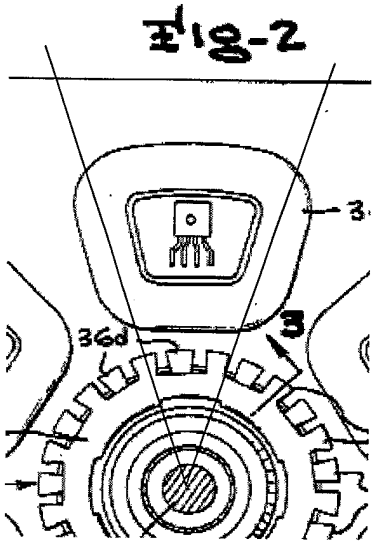
the coil, crossing each other at a shaft center having a vertex angle of 360/P degree, the vertex angle being equal to the polarity angle of 360/P degrees based on the permanent magnet;

the coil winding bundles forming the isosceles sides are disposed within an area covered by an angle of 360/(4 X P) degree both inside and outside with respect to a center of the angle of 360/P degree, and

the coils adjacent to each other are spaced out at intervals of (360/P) x (5/3) degree.

Welterlin teaches a brushless motor, wherein:

any one of the coils has isosceles sides interlinking with magnetic field generated by the polarities extension lines of the isosceles sides extending through centers of winding-bundles of the coil, crossing each other at a shaft center having a vertex angle of 360/P degree, the vertex angle being equal to the polarity angle of 360/P degrees based on the permanent magnet (Shown below);



the coil winding bundles forming the isosceles sides are disposed within an area covered by an angle of 360/(4 X P) degree both inside and outside with respect to a center of the angle of 360/P degree, and

the coils adjacent to each other are spaced out at intervals of (360/P) x (5/3) degree for the purpose of obtaining a brushless, self-commutating DC motor having a tachogenerator for producing speed control signals.

It would have been obvious to one skilled in the art at the time the invention was made to use the coil disposition and spacing disclosed by Welterlin on the brushless motor disclosed by Harrison et al. for the purpose of obtaining a brushless, self-commutating DC motor having a tachogenerator for producing speed control signals.

It would have also been obvious to one having ordinary skill in the art at the time the invention was made to base the polarity angle of the permanent magnet polarities on the permanent magnet, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

4. With regards to claim 2, Harrison et al. discloses the claimed invention except for the outer rim of the coil measuring not more than ø 40 mm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the ø of the outer rim of the coil to measure not more than 40 mm, for the purpose of obtaining unoccupied space between the coils to place sensors, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. With regards to claim 5, Harrison et al. discloses the use of position detectors for detecting a position of said rotor.

It would have been obvious to one skilled in the art at the time the invention was made to place said 3 detectors at intervals of (360/P) X (2/3) degree and in an area where the coils are not placed.

It must be noted that it would have been an obvious matter of design choice to select any real number larger than one, to mathematically describe the area of coverage of the coils to the vertex angle for the purpose making them smaller to create unoccupied space between the coils to place sensors, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose,* 105 USPQ 237 (CCPA 1955).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramírez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
March 28, 2003

NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800